

Rainscaping

A guide to local projects in St. Louis



Rain garden on South Grand Boulevard in the city of St. Louis.

Rainscaping includes rain gardens, bioswales, combinations of plantings, water features, catch basins, permeable pavement and other activities that manage stormwater as closely as possible to where it falls. Diverse landscape, including trees, shrubs, perennials, mulch and amended soils, intercepts and disperses rain as it falls and will allow more water absorption into the soil and more water uptake by plants.



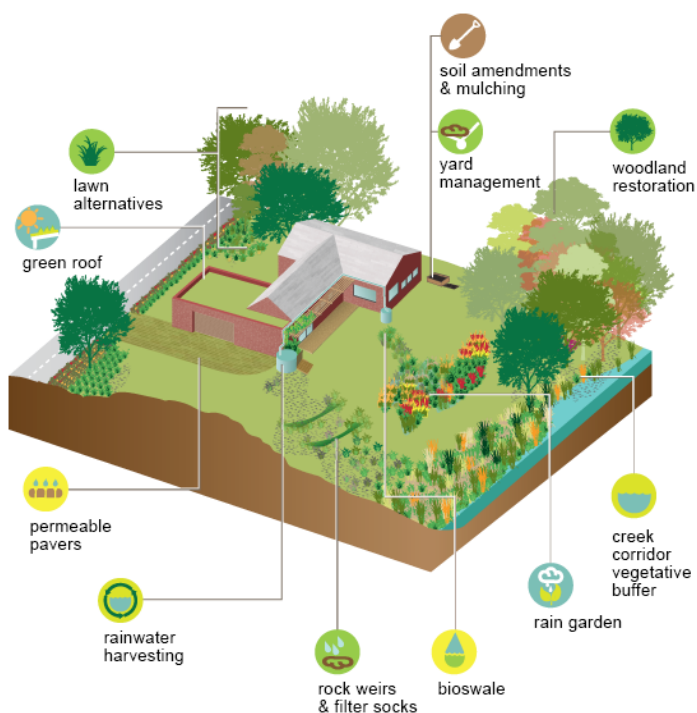
EAST-WEST GATEWAY
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Creating Solutions Across Jurisdictional Boundaries

Rainscaping around the home

In much of our urban and suburban environment, impervious surfaces such as rooftops, driveways and roads have covered healthy soils and native plant communities that once readily absorbed rainwater. The resulting runoff contributes to water pollution, health challenges and property damage. Rainscaping strategies may reduce the area of, or capture the runoff from, impervious surfaces.

Rainscaping can improve both the beauty and function of a private or public space. The image below shows a variety of techniques that can be used to capture and slow rainwater where it falls. For more information please go to Missouri Botanical Garden's comprehensive rainscaping guide: www.mobot.org/rainscaping.



*Rainscaping opportunities around a residence
(Image used courtesy of Missouri Botanical Garden).*

Below ground level, rainscaping improves soils to store, filter and absorb stormwater. Above ground, native plants, basins, and water features create green spaces that also help store and absorb water, while pervious pavements quickly remove rainwater from surfaces of parking lots, sidewalks and driveways.

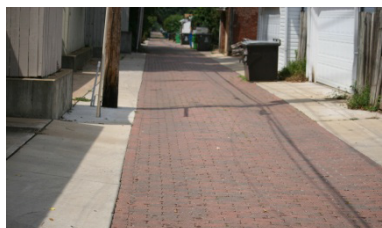


South Grand Great Street in the city of St. Louis

Voluntary projects are providing new examples of rainscaping. Urban landscapes contain impervious surfaces, where rainwater runs off and straight to storm drains. On South Grand Blvd., specially designed pervious concrete sidewalks and rain gardens capture stormwater before it enters a storm drain. These green practices improve water quality and help reduce flooding.

The demonstration project on South Grand was completed in 2014 in partnership with the South Grand Community Improvement District, the city of St. Louis, East-West Gateway and the Metropolitan St. Louis Sewer District (MSD). Funding was also provided by the U.S. Environmental Protection Agency (EPA) Region 7, through the Missouri Department of Natural Resources (MDNR), under section 319 of the Clean Water Act.

Pervious pavement in alleys can allow stormwater to seep into the ground rather than running on streets and into sewers. Several blocks of alleyway on Utah Place have permeable paving blocks installed under a project with the neighborhood association and the city of St. Louis, and partially funded by EPA through MDNR.



Pervious paving blocks in alley.

Brightside St. Louis' Demonstration Garden

Located at the southeast corner of Kingshighway and Vandeventer, in the city of St. Louis, Brightside features a beautiful example of urban stormwater management. The garden showcases over 3,300 native plants, shrubs and trees; a rain-barrel system; permeable pavements; a rain garden/bio-swale; a cistern; and two urban forestry and stormwater management systems. The rainscaping features found in Brightside's garden not only help to protect water that falls directly onto it, they also educate residents, community leaders, engineers and architects about the many benefits of stormwater management. Educational workshops,



Brightside demonstration rainscaping. (Photo by Jim Diaz).

garden tours and interpretive signage throughout the garden illustrate how these features can be incorporated in yards, community spaces and even large-scale developments.

Brightside's garden is a treasured community asset thanks to EPA funding through MDNR, the support from many generous donors and the hard work of hundreds of volunteers including 20 U.S. Marines.



Interpretive signage in the garden helps educate visitors.

Missouri Botanical Garden Rainscaping

Missouri Botanical Garden's renovated parking lot demonstrates rainscaping alternatives. These features capture and hold rainwater on site, reducing runoff, soil erosion and water pollution. Rain gardens and pervious pavement were designed to capture all stormwater from 90 percent of annual rain events (1.14 inches or less in a 24-hour period) and serve one-half of the Garden's parking area.

- Rain gardens in the east and west parking lots were constructed with special rock and fiber filters, rain garden soil and native plants.
- Porous concrete, porous asphalt and porous pavers allow water to go through the paving surface into an underground reservoir where it filters into the soil.
- Grasscrete pavers which allow tree roots necessary water access were retained from the previous parking lot.
- Porous rubberized sidewalk leads into the parking lot.



Rain garden in parking lot.

The Garden also engages the community in rainscaping. The goal of the Garden's Deer Creek Watershed Alliance, founded in 2008, is to promote cleaner, safer water in Deer Creek, a River des Peres tributary in St. Louis County. All 20 of the municipalities in the watershed have endorsed both the Deer Creek Watershed Plan and the Deer Creek Rainscaping Cost-Share Program. To date, watershed landowners have installed 194 rainscaping projects with cost-share funding by MSD, Mabel Dorn Reeder Foundation, Great Rivers Greenway, Missouri Department of Conservation, and EPA through the MDNR under Section 319 of the Clean Water Act.



Lawn replaced by rainscaping.

The Deer Creek rainscaping program was used as a model for the development of MSD's Small Grants Program, which is co-administered by Missouri Botanical Garden and MSD.

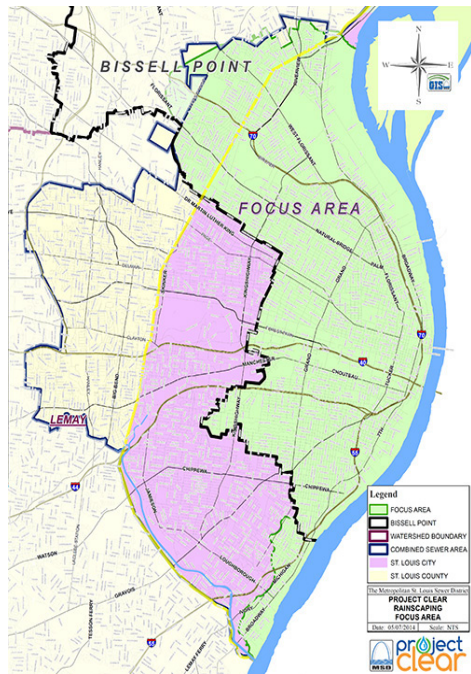
Metropolitan St. Louis Sewer District (MSD) Project Clear Rainscaping Program

Rainwater contributes to combined sewer overflows in older parts of the region, including the city of St. Louis and adjacent communities where stormwater and sewage are collected in the same pipes. These pipes are called combined sewer systems and during heavy rain events, they can overflow to nearby streams or the Mississippi River. Rainscaping can reduce the volume of rainwater entering the sewer system, helping to reduce these overflows. In most developments after 1960, stormwater and sanitary sewers were separated and the stormwater pipes lead directly to nearby streams. In these areas, rainscaping can improve water quality in local streams by helping to delay and filter stormwater. Used effectively, rainscaping can reclaim stormwater naturally, reduce sewer overflows and minimize basement backups.

MSD Project Clear will invest \$100 million in local, community rainscaping efforts with the overall goal of reducing combined sewer overflows to the Mississippi River. The focus area for the Project Clear rainscaping program is the green area in the map shown here. (See also <http://www.projectclearstl.org/get-the-rain-out/rainscaping/>.)

MSD Project Clear currently supports three types of rainscaping projects:

- Pilot/Neighborhood projects
- Large-scale projects
- Small Grants program



MSD's Rainscaping Program Focus Area, city of St. Louis.

MSD designed and built a number of Pilot/Neighborhood projects in the Bissell Point Watershed service area. The pilot program demonstrates how rainscaping may reduce combined sewer overflows resulting from heavy rain events. Six neighborhood-scale rain gardens have been constructed. These are large bio-retention basins like the Old North Rain Garden featured in the photo shown on the next page.

Large-scale projects allow for partnership between MSD and local government agencies, schools, community development organizations and private developers to incorporate rainscaping features into their projects. Several projects, such as the bioswale pictured on the right as part of the Cortex project, have been implemented as “Early Action” projects. The projects are considered “early” because they were funded before the Pilot Program concludes at the end of 2015.



Large-scale Cortex project spans several blocks.



Clyde C. Miller Career Academy rain garden.

The main objective for the MSD Project Clear Rainscaping Small Grants program is to encourage the public to use simple rainscaping techniques on their properties to reduce the impact of stormwater on the sewer system. Grants may be up to \$3,000 per project. The first eight grants from 2014 went to churches, schools and community organizations which serve as examples and messengers for the program. One of the first Small Grants helped to build a rain garden at Clyde C. Miller Career Academy.

The 2015 MSD Project Clear Small Grants program intends to award up to 50 grants. For information, or to follow the program, please visit <http://www.projectclearstl.org/get-the-rain-out/rainscaping-small-grants-program/>.



The Old North Rain Garden is part of a five-year, \$3 million pilot program for MSD Project Clear's overall \$100 million rainscaping effort.

Thanks to many partners who have worked together on this brochure
and on improving water quality in the St. Louis region:



Missouri Department
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